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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,113	07/11/2001	David L. Hall	IOME-0781	1869

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Michael J. Swope  
WOODCOCK WASHBURN KURTZ  
MACKIEWICZ & NORRIS LLP  
One Liberty Place-46th Floor  
Philadelphia, PA 19103

EXAMINER
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MAGEE, CHRISTOPHER R

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/903,113	<b>Applicant(s)</b> HALL, DAVID L.	
	<b>Examiner</b> Christopher R. Magee	<b>Art Unit</b> 2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7 and 16-18 is/are allowed.
- 6) ☒ Claim(s) 8 and 11-15 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/11/2001</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 8 is rejected under 35 U.S.C. 103(a) as being anticipated by Jones et al. (hereinafter Jones) (US 5,636,085) in view of Gustafson et al. (hereinafter Gustafson) (US 5,473,488).

- Regarding claim 8, Jones shows a head stack assembly [Figure 3] for interfacing with a flexible medium [13] of a disk, wherein the flexible medium [13] rotates approximately in a center plane, the head stack assembly comprising:

- a first head gimbal assembly comprising:

- (i) a load beam [20];

- (ii) a flexure member [Examiner's annotated drawing] coupled to the load beam;

- and

- (iii) a head [11] coupled to the flexure member, and

- a second head gimbal assembly comprising:

- (i) a load beam [21];

(ii) a flexure member [Examiner's annotated drawing] coupled to the load beam;  
and

(iii) a head [12] coupled to the flexure member.

Jones does not show a flexure member having non-zero static roll angles  $\theta_a$  and  $\theta_b$  from the plane of the flexible medium.

Gustafson shows a head gimbal assembly comprising a flexure member [60] having non-zero static roll angle,  $\theta$  [Figure 8].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the first head gimbal assembly and the second head gimbal assembly of Jones with a flexure member having a non-zero static roll angle as taught by Gustafson.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to provide the first head gimbal assembly and the second head gimbal assembly of Jones with a flexure member having a non-zero static roll angle as taught by Gustafson in order to correct roll error so that correct flying attitude is achieved [Gustafson; col. 8, lines 30-35].

2. Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (hereinafter Jones) (US 5,636,085) and Gustafson et al. (hereinafter Gustafson) (US 5,473,488) as applied to claim 8 above, and further in view of Souda et al. (hereinafter Souda) (US 6,388,839 B2).

- Regarding claim 11, Jones and Gustafson show all the features as noted above but does teach or suggest first head gimbal assembly and the second head gimbal assembly induce a curvature to the flexible medium of a disk to enhance the communicative signal between the flexible medium and the headstack assembly.

Souda discloses the first head gimbal assembly and the second head gimbal assembly induce a curvature to the flexible medium of a disk to enhance the communicative signal between the flexible medium and the headstack assembly [col. 14, lines 52-67; Figures 25 and 26].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first head gimbal assembly and the second head gimbal assembly of Jones and Gustafson induce a curvature to the flexible medium of a disk to enhance the communicative signal between the flexible medium and the headstack assembly as taught by Souda.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to have the first head gimbal assembly and the second head gimbal assembly of Jones and Gustafson induce a curvature to the flexible medium of a disk to enhance the communicative signal between the flexible medium and the headstack assembly as taught by Souda in order to limit the levitation of each rail with respect to the recording medium and thereby improve a recording/reproducing characteristic of both the magnetic head and head chip [Souda; col. 3, lines 45-54].

- Regarding claim 15, Jones and Gustafson shows all the features as noted above including each head comprises:

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a body [Figure 2] having a top and bottom opposite the top, and a first side and a second side opposite the first side;

first rail [14] extending longitudinally along the bottom of the head, proximate to the first side;

a second rail [15], extending longitudinally along the bottom of the head, proximate to the second side;

Jones and Gustafson do not teach or suggest a sensor located at least partially in the first rail of the head.

Souda discloses a sensor (i.e., head chip) [24] located on rail [26b] [Figure 6].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the first rail of Jones and Gustafson with a sensor as taught by Souda.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to provide the first rail of Jones and Gustafson with a sensor as taught by Souda for high recording density (high order mode). The sensor has a structure capable of increasing a track recording density [Souda; col. 6, lines 5-15].

3. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (hereinafter Jones) (US 5,636,085) and Gustafson et al. (hereinafter Gustafson) (US 5,473,488) as applied to claim 8 above, and further in view of Schudel (US 5,588,200).

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- Regarding claims 12-14, Jones and Gustafson shows all the features as noted but does not teach or suggest each flexure member comprises a dimple coupled to the load beam thereby allowing the flexure member to pivot with respect to the static roll angle.

Schudel shows a flexure member [8], which includes a leaf spring (i.e., force member [42]), comprises a dimple [46] coupled to the load beam [10] thereby allowing the flexure member [8] to pivot with respect to the static roll angle [Figure 2; col. 1, lines 49-57].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the flexure member of Jones and Gustafson with a dimple as taught by Schudel.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to provide the flexure member of Jones and Gustafson with a dimple as taught by Schudel in order to control pitching and rolling movements as the slider's position changes in the radial (x-axis) and circumferential (y-axis) directions of the magnetic disc [Schudel; col. 1, lines 53-55].

#### *Allowable Subject Matter*

4. Claims 1-7 and 16-18 are allowed. The following is an examiner's statement of reasons for allowance:

- **Claim 1** specifies a head stack assembly which requires:

*“the first head and the second head substantially parallel to each other and disposed at non-zero static roll angles,  $\theta_a$  and  $\theta_b$ , respectively from the plane of the flexible medium.”*

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Jones et al. '085 do not show the first head [11] and second head [12] substantially parallel to each other and disposed at non-zero static roll angles,  $\theta_a$  and  $\theta_b$ , respectively from the plane of the flexible medium as taught by the claimed invention.

Gustafson et al. '488 show a single head that is parallel to the flexible medium with a non zero static roll angle.

Souda et al. '839 show a first and second head [20] substantially parallel to each other but does not teach or suggest the first and second head being disposed at non-zero static roll angles,  $\theta_a$  and  $\theta_b$ , respectively from the plane of the flexible medium. The heads [20] are disposed at non-zero dynamic pitch angles during recording/reproducing operations.

Therefore, these features, in combination with other features of claim 1, are not anticipated by, nor made obvious over, the closest prior art of record of Jones et al. (US 5,636,085), Gustafson et al. (US 5,473,488) and/or Souda et al. (US 6,388,839 B2).

- **Claim 16** specifies a method of reducing out-plane- vibration in a flexible medium which requires:

*“angling the first and second heads such that the first and second head remain substantially parallel but offset from the plane of the flexible medium by non-zero static roll angles of  $\theta_a$  and  $\theta_b$ .”*

Jones et al. '085 do not show angling the first and second heads such that the first and second head remain substantially parallel but offset from the plane of the flexible medium by non-zero static roll angles of  $\theta_a$  and  $\theta_b$  as claimed in the present invention.

Gustafson et al. '488 show a single head that is parallel to the flexible medium with a non zero static roll angle. Gustafson does not teach or suggest angling first and second heads to



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remain parallel to each other but offset from the plane of the flexible medium by non-zero roll angles.

Souda et al. '839 show a first and second head [20] substantially parallel to each other but does not teach or suggest the first and second head being disposed at non-zero static roll angles,  $\theta_a$  and  $\theta_b$ , respectively from the plane of the flexible medium. The heads [20] are disposed at non-zero dynamic pitch angles during recording/reproducing operations.

Therefore, these features, in combination with other features of claim 16, are not anticipated by, nor made obvious over, the closest prior art of record of Jones et al. (US 5,636,085), Gustafson et al. (US 5,473,488) and/or Souda et al. (US 6,388,839 B2).

5. Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Magee whose telephone number is (703) 605-4256. The examiner can normally be reached on M-F, 8: 00 am-5: 30 pm.

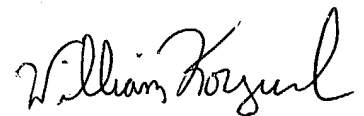
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (703) 305-6137. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 1, 2004

  
Christopher R. Magee  
Patent Examiner  
Art Unit 2653

  
WILLIAM KORZUCH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600